AQUACULTURE ECONOMICS TRAINING CONSULTANCY REPORT

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Prepared by

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CONTENTS

I. INTRODUCTION

Recent interest in developing and management of living aquatic resources as a viable means of improving the standards of living of rural poor in Asia could be seen from the fact that significant funds and manpower are being devoted to research in this area. However, traditional research effort have been and still are directed towards biological and technological aspects for the purpose of ganerating new technology or for increasing efficiency of existing technology. Research on economic aspect has been neglected and the need to undertake economic as well as biological/technical research in order to derive sound decisions pertaining to the efficient use of limited resources for the production of aquatic organisms to fulfill human consumption needs requires litter emphasis. It is with this awareness and the need for some exposure to economics for fishery biologists and scientists that the Faculty of Resource Economics and Agribusiness, Universiti Pertanian Malaysia (UPM) has conducted a short-intensive training course in Fisheries and aquaculture economics each in 1984 and 1985.

Funds for conducting the two short-courses were made available by the International Development Research Centre (IDRC). Participants for the above courses were selected from researchers involving in IDRC-supported fisheries projects in Southeast and South Asia. The detailed list of the short-course participants is attached in Appendix A.

After conducting the short-course for two consecutive years, both IDRC and UPM felt that it is timely and essential to access, evaluate and review the usefulness of the training program in aiding the participants in their fisheries research projects. This consultancy has been conducted to meet this need. Specifically, the terms of reference of this consultancy are as follows:

(a) To travel to Thailand and Sri Lanka[1] for follow-up visits to researchers from IDRC - supported fisheries projects and national fisheries programs in these countries who participated in the short-course in Fisheries Economics at UPM in 1984 and 1985;

(b) To work with the researchers at their project field sites and to guide them in using the economics methodologies (learned at the UPM short course) for relevant data collection and/or analysis in the projects' current trials and/or design of further trials; and

(c) To conduct, if necessary, training exercises on those economic techniques which the scientists are having the most difficulties.

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[1] The evaluation of the participants from countries other than Thailand and Sri Lanka will be covered in a seperate report by Mr. K. Kuperan of UPM.

II. THE VISITS

Letters stating the intended visits (including the scheduled date) were sent to the participants at the begining of September 1985. The schedule of the proposed meetings is attached in Appendix B. Only one participant from Thailand (Mr. Vises Chanyanuwat) had informed that the proposed date was unsuitable and therefore, an alternative date was fixed to meet him. None of the other participants replied that the proposed dates were unsuitable and therefore it was presumed they were available for the meetings. However, during the visit to Sri Lanka, Mr. Wanninayake was out of the country to attend a training course in Molluscs Depuration Process at SEAFDEC, Philippines. He was subsequently interviewed by Mr. Kuperan who met him there. Two other participants from Sri Lanka, Mr. Chandrasena and Mr. Muthukumarana were on leave and could not be contacted in their respective office. As an alternative to replace the personal interview, a questionaire was drafted and it was requested for them to complete and return the questionaire by 15 January 1986. To date, no reply was obtained from either of them.

III. AN OVERALL EVALUATION OF THE COURSE

All participants of the short-course felt that it was a very useful, introductory course to give them direct exposure to economic concepts, theory and analyses. In particular, the course enhanced their understanding of the economic decision concerning aquacultural production process, i.e to aim at achieving maximum profit as opposed to their thinking before attending the course i.e. to obtain maximum production. In addition, this exposure to economics enabled them to understand research and consultancy reports using simple economic analyses. However, some of them felt frustrated because they could not understand those reports with more complicated economic analyses and they have requested for a course in economics at intermediate level. These are the indications that the short-course had arouse immense interest in economics for some if not all of the participants. In fact, one participant from Sri Lanka plans to undertake a master degree program with a minor in economics at a local university. Thus, it can be concluded that the short-course has achieved its objective as an exposure course in economic principles and application to fisheries scientists. Hence all the participants felt that the course should be continued in the future to provide the necessary exposure in economics to more fisheries scientists.

There are however shortcomings as pointed out by the participants, particularly with respect to the course content and course emphasis. Most of them were of the opinion that since they are primarily involved in aquaculture production, the course should place greater emphasis on aquaculture economics rather than diverting

their attention on the economics of capture fisheries they are not familiar with. Although the basic economic principles concerning capture fisheries and aquaculture are similar, the application of these theories are quite different for these two types of fisheries. Some of them suggested that if the class consists of both capture fisheries and aquaculture scientists, it is better for the participants to attend the same class on basic economic theories but they may be separated when dealing with application of the theories and empirical exposition in their respective expertise. In this manner, more depth can be gained in economic analysis of their respective field.

An aspect which is considered important by the participants is empirical exercise. These exercise, as some of the participants asserted will contribute greatly to the understanding of the course and can demonstrate to them the ways to convert theoretical expositions into empirical applications. Thus, some of them suggested that future course, if ever conducted, should contain more empirical exercises. If possible, the data used for the empirical exercises should be collected from fish farmers rather than hypothetical.

Almost all the trainees expressed that the visits to fish farms were not as beneficial as they expected. They felt that the itenerary and the objective of the field trip should be made known in advance. In addition, they should be informed on the type of data to be collected during the field trip. These data can then be analysed and discussed after the field trip. In such a way, the trainees could experience the processes involved in economic research menthod. This experience will be invaluable to them in incorporating economic

components when designing and conducting their research.

IV. TRAINEES' RESEARCH PROJECTS

The purpose of this section is to comment the common problems encountered by the trainees in their attempts to incorporate economic tools which they have learnt during their training at UPM in their research projects. These comments were drawn from discussions with these trainees as regards research design for planned projects, the relevance of the data collected and most important the analytical methods used in the economic analysis of the projects. A project by project descriptive summary will be presented in Appendix C.

Generally, non-sophisticated economic analysis involving computations of costs and returns has been employed by the trainees in their research projects. The use of only simple analysis is inevitable since these trainees were exposed to introductory economics only for a durations of one month. The trainees have demonstrated their ability to use simple economic analysis with ease. Even when they face any problem, they can refer to relevant examples and exercises in the course handbooks to guide them in their computational problems.

However, the trainees find it difficult to comprehand more sophisticated economic analytical techniques and could not therefore use them in their research projects. In order to prepare fisheries scientists for more regorous use of economic analytical techniques,

and to allow them to gain experience in the use of such techniques, it is recommended that the course intruction materials be revised to include more empirical examples and exercise. In addition, a portion of the training time should be set aside to discuss their research projects and to help in analysing the data collected.

During the visits, it was found that most trainees were able to collect adequate and relevant economic data for simple economic analysis. Their problem was mainly inadequate analysis of these data where most of them computed only the net return or profits to a particular project Therefore, several other simple analyses such as measures of input productivities financial measures and return to investment measure were suggested. These analyses, it was hoped, will help to strengthen the evaluation of the performance of a particular project. In addition, to ascertain the economic and investment feasibility of an aquaculture project, it was recommended that analyses such as discounted net present value, discounted benefit-cost analysis and the internal rate of returns be computed.

Trainees also find difficulty in interpreting the results of the analysis. For example, one trainee from Sri Lanka enquired about the meaning of the internal rate of return to his pen-culture project. Therefore, help was rendered to explain the interpretation of the results.

V. CONCLUSIONS

Several conclusions can be drawn from the visits as follows:

1. The tarinees felt that the short-course was well organised and was very useful in exposing them to economic concepts, theories and analyses.

2. They were of the opinion that the short course should be continued so that more fisheries scientists can benefit from it.

3. Several shortcomings were found with regards course content, course emphasis and field trip that need to be overcome for the improvement of the course.

4. The trainees were able to use simple economic analytical techniques in their research projects but find it difficult to comprehand more sophisticated techniques.

5. The trainees were able to collect adequate and relevant data for simple economic analysis.

6. In incorporating economic analysis in their research projects, they faced the problems of inadequate analysis of the data and in the interpretation of the results of analysis.

APPENDIX A

LIST OF TRAINEES FOR 1984 AND 1985

1984

1. Mr. Romeo C. Mesa
Aquaculture Department
Southeast Asean Fisheries Development Center
Tigbauan, Iloilo
Philippines

2. Ms. Kaylin Gonzales-Corre
Aquaculture Department
SEAFDEC Leganes Research Station
Leganes, Iloilo
Philippines

3. Ms. Nilda S. Tabbu
Aquaculture Department
SEAFDEC Binangonan Research Station
Binangonan, Rizal
Philippines

4. Ms. Chutima Tuntikitti
Department of Aquatic Science
Faculty of Natural Resource
Prince of Songkhla Universiti
Haddyai, Songkhla
Thailand

5. Mr. Vijay Srisuwantach
National Inland Fisheries Institute
Kasetsart University Campus
Bangkhen, Bangkok 10900
Thailand

6. Mr. Yasses Edi Herumurti
Marine Fisheries Research Institute
Jakarta
Indonesia

7. Mr. Gamini Muthukumarana
Freshwater Fish Breeding and Experimental Station
Udawalawe
Sri Lanka

8. Mr. W.M. Indrasena
National Aquatic Resources Agency
Crow Island
Mattakkuliya
Colombo - 15
Sri Lanka

9. Mr. P.P.G.S.N. Siriwardena
Inland Fisheries Division
Ministry of Fisheries
Secretariate Building
6th. Floor
Colombo - 10
Sri Lanka

10. Mr. Ismail Awang Kechik
Freshwater Fisheries Research Center
Department of Fisheries Malaysia
Batu Berendam
Melaka
Malaysia

11. Mr. Nik Ab. Wahab Mat Diah
Ibu Pejabat Perikanan
Kementerian Pertanian Malaysia
Jalan Mahameru
Kuala Lumpur

12. Mr. Md. Daim Tohiyat
Lembaga Kemajuan Ikan Malaysia
Tingkat 7, Wisma PKNS
Jalan Raja Laut
Kuala Lumpur

13. Mr. Boniface Anat AK Litis
Department of Agriculture
(Fisheries Division)
Agricultural Development Centre
Long Lama, Baram
Sarawak
Malaysia

1985

1. Mr. Abdul Majid bin Alias
Assistant Development Officer
Fisheries Development Authority of Malaysia (LKIM)
7th Floor, Wisma PKNS
Jalan Raja Laut
Kuala Lumpur 01-06
Malaysia

2. Mr. Daim Haji Basrun
Assistant Fisheries Officer
Department of Fisheries
4th Floor, Berjaya Building
Kota Kinabalu
Sabah

3. Mr. Mansor bin Mat
Fisheries Officer (Research)
Marine Resource Section
Fisheries Research Institute
Glugor, Pulau Pinang
Malaysia

4. Mr. Pipik Taufik
Research Institute for Inland Fisheries (BPPD)
Jl. Sempur No. 1
Bogor
Indonesia

5. Mr. Sobri Yusuf
c/o Dr. Alie Purnomo
Director
Research Institute for Inland Fisheries (BPPD)
Jl. Sempur No. 1
Bogor
Indonesia

6. Mr. W.M.T.B. Wanninayake
Research Officer
National Aquatic Resources Agency
Crow Island, Mattakkuliya
Colombo 15
Sri Lanka

7. Mr. G.K.J. Chandrasena
c/o Director of Inland Fisheries
Ministry of Fisheries
P.O. Box 1707, New Secretariat
Maligawatta, Colombo 10
Sri lanka

8. Ms. Mari-Ann Mangaser
Science Research Specialist 1
Fisheries Research Department
Philippine Council for Agriculture
and Resource Research and Development
Los Banos, Laguna
Philippines

9. Mr. Antonio Villaluz
Aquaculture Department
Southeast Asian Fisheries
Development Center (SEAFDEC)
P.O. Box 256
Iloilo City
Philippines

10. Ms. Ma. Suzette R. Licop
Training and Extension
Aquaculture Department
Southeast Asian Fisheries Development
Center (SEAFDEC)
Tigbauan, Iloilo
Philippines

11. Mr. Vises Chanyanuwat
Farming System Research Institute
Department of Agriculture
Bangkhen, Bangkok 10900
Thailand

12. Mr. G.B. Nhuchhe Pradhan
Assistant Fishery Development Officer
c/o Mr. Bhola Pradhan
Fisheries Development Division
Department of Agriculture
Balaja
Nepal.

APPENDIX B

SCHEDULE OF PROPOSED MEETINGS WITH
TRAINEES FROM THAILAND AND SRI LANKA

8/12/85 (SUN)	- Leaving Kuala Lumpur for Haddyai
9/12/85 (MON)	- Discussion with Ms. Chutima Tuntikitti Department of Aquatic Science Faculty of Natural Resource Prince of Songkhla University, Haddyai, Songkhla Tel: Office - 245668 Visit project sites
10/12/85 (TUES)	- Leaving Haddyai for Bangkok Discussion with Mr. Vises Chanyanuwat, Farming System Research Institute Department of Agriculture, Bangkhen, Bangkok 10900
11/12/85 (WED)	- Discussion with Mr. Vijay Srisuwantach National Inland Fisheries Institute Kasetsart University Campus Bangkhen, Bangkok 10900
12/12/85 (THURS)	- Visit project sites of both Mr. Vises and Mr. Vijay
13/12/85 (FRI)	- Leaving Bangkok for Colombo
14/12/85 (SAT)	- Discussion with Mr. G.K.J. Chandrasena and Mr. P.P.G.S.N. Siriwardena Inland Fisheries Division Ministry of Fisheries P.O. Box 1707, New Secretariate Maligawatta, Colombo 10
15/12/85 (SUN)	- Visit project sites of both Mr. Chandrasena and Mr. Siriwardena

16/12/85 (MON) - Discussion with Mr. W.M.T.B. Wanninayake and Mr. W.M. Indrasena
National Aquatic Resources Agency
Crow Island, Mattakhuliya
Colombo 15

Tel 590007

17/12/85 (TUES) - Visit project sites of both Mr. Wanninayake and Mr. Indrasena

18/12/85 (WED) - Discussion with Mr. Gamini Muthukumarana
Freshwater fish Breeding and Experimental Station
Udawalewa

19/12/85 (THURS) - Visit projects by Mr. Muthukumarana

20/12/85 (FRI) - Leaving Colombo for Kuala Lumpur.

APPENDIX C

DESCRIPTIVE SUMMARY OF TRAINEES' RESEARCH PROJECTS.

A. Chutima Tuntukiti

I. Project : Thale Noi Project, Thailand.

II. Status : Completed

III. Objective : To compare alternative stocking densities of Pen-Culture of freshwater fish

IV. Problems :
1. Do not know how to categorise capital costs.
2. Have negative profits for all the alternative stocking densities.
3. Inadequate analysis of the data i.e. only computed net profit.

V. Suggestions :
1. Compute the annual depreciation costs of the capital items and added them to the fixed costs. The easiest way of computing depreciation is to use straight - line method with zero salvage value.
2. The negative profits were due to high total cost of capital such as motor boat and wooden pens and nets included and also due to improper choice of project sites if the depreciation costs instead of total cost of these items were taken as the cost, the profits would be significantly increased. In addition the cost of certain

capital items are too high. For example, fish farmers would not use motor boat in their daily operation.

3. The most economic stoking density would be the one with the lowest negative net profit.

4. Recommended to her that in addition to net profit analysis, other measures such as input productivity measures, other financial measures and return to investment measure. These additional analyses would help to strengthen the evaluation of alternative stocking densities.

V. New Project : A similar project has been planned for 3 years starting mid-1986. It was suggested that the points above should be accounted in the research design. In addition, the posibility of including an economist from the same institution in the research team was also desirable.

B. Vises Chanyanuwat

I. Project : Farming System Research in Phrae Province, Thailand.

II. Status : Planning Stage

III. Objectives :
1. To collect basic information on the levels of output and input for different crop mix.
2. To ascertain the pattern of integrated farming systems in the region.

IV. Problems :
1. Some data were collected but not enough detail especially on the costs items.
2. Do not know what analyses to be used.

V. Suggestions :
1. For detailed data collection, follow the procedures of Farm Records and Accounting set out in the course instruction handbook.
2. Several analyses can be used to ascertain the pattern of integrated farming system. For example, can compute the net return, input utilization and input productivity for each type of farming system. A further step in the analysis is to use Programming technique to find the optimal enterprise mix. Once optimal plan is obtained, it can be compared with actual farming system and the optimal plan can be recommended to the farmers.

C. Vijay Srisuwantach

The trainee is involved in nursery and grow-out production of fresh-water fish. The nature of his job is specific to the production aspect of fresh-water fish. The economic analyses will be the responsibility of the economic division within the organisation. In spite of this limitation, the trainee do try to collect economic data and use simple benefit-cost type of analysis in his projects. There was not much problem pertaining to the use of economic analysis in his project at the time of visit and helps of collegues from the economic division can always be obtained in case there is any problem.

D. P. PG. S.N. Siriwardena

I. Project : Project Evaluation of Pen-Culture of Milkfish

II. Status : Completed

III. Problems :
1. Do not know how to interprete the results of the analysis such as internal rate of return.
2. Do not know how to analyse a change in the materials used for pen construction.

IV. Suggestions :
1. To ascertain the feasibility of the project, compare the computed internal rate of return (IRR) with rate of Government Bond for economic analysis.

In financial analysis, the IRR should be compared with commercial bank lending rate. A higher value of IRR indicates that the projects in feasible.

2. To analyse a change that affect only a portion of the project, partial budgeting analysis is suggested. The technique is well explained in the course handbook.

E. W.M. Indrasena

I. Project : Analysis of Molluses Culture in Trincomalee

II. Status : Abandon due to social unrest but would like to continue if situation return to normal.

III. Objectives :
1. To compare different culture techniques for molluscs production.
2. To examine the relationship between size of raft and yield in molluscs culture.

IV. Problem : Do not know what analysis to use.

V. Suggestions :
1. For the first objective, can use simple farm budget analyses such as net profits, input productivity measures, financial measures, return to investment and benefit-cost measure. However, in order to reduce environmental influence, different culture techniques should be caried out at the same site.

2. For second objective, a production function analysis can be caried out by having different sizes of raft at the same culture site.

F. W.M. T.B. Wanninayake

Unable to meet him during the visit because he was attending a training course on Molluscs Depuration Process at SEAFDEC, Philippines. He was subsequently interviewed by Mr. K. Kuperan.

G. G.K.J. Chandrasena and Muthukermarana

Unable to meet them during the visit because they could not be contacted at their respective office. A questionnaire was sent to each of them but to date no reply was received.